

HEALTH AND SAFETY PLAN

**EXCAVATION CLEANUP, ALTERNATIVE PRE-DESIGN ACTIVITIES
AND WATER TREATMENT SYSTEM OPERATION AND MAINTENANCE
EMJ SLAG SITE
SOUTHEAST CORNER OF SOUTH 218TH STREET AND 88TH AVENUE SOUTH
KENT, WASHINGTON**

**Submitted by:
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**For:
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June 7, 2010

HEALTH AND SAFETY PLAN REVIEW AND APPROVAL

Client: Earle M Jorgensen Company

Project Name: EMJ Slag Site

Project Number: 831-022

Start Date: June 2010

End Date: June 2011

Plan Expiration Date: June 2011 (Last day of expected fieldwork or no longer than 6 months)


APPROVED BY:

Amy Essig Desai
Project Manager


Signature

6-7-10
Date

Richard McManus
Office Health and Safety Coordinator


Signature

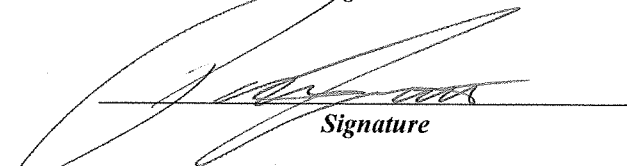
6/7/10
Date

Ken Scott
Site Health and Safety Officer


Signature

6-7-2010
Date

Peter Jewett
Principal-in-Charge


Signature

6/7/10
Date

This Health and Safety Plan (HASP) was written for the use of Farallon Consulting, L.L.C. (Farallon) and its employees. It may be used also by trained and experienced Farallon subcontractors as a guidance document. However, Farallon does not guarantee the health or safety of any person entering this Site.

Due to the potentially hazardous nature of the site and the activities occurring thereon, it is not possible to discover, evaluate, or provide protection for all possible hazards that may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but does not eliminate, the potential for injury. The health and safety guidelines in this HASP were prepared specifically for this site, its conditions, purposes, dates of field work, and personnel, and must be amended if conditions change.

Farallon claims no responsibility for the use of this HASP by others. This HASP will provide useful information to subcontractors and will assist them in developing their own HASP, but it should not be construed as a substitute for their own HASP. Subcontractors should sign this HASP (see *Health and Safety Plan Acknowledgment and Agreement Form*, Attachment 1) as an acknowledgement of hazard information and as notice that this HASP does not satisfy their requirement to develop their own HASP.

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ATTACHMENTS

Attachment 1 Health and Safety Plan Acknowledgement and Agreement Form

Attachment 2 Directions to Hospital

Attachment 3 Potential Topics for Daily Health and Safety Meeting

Attachment 4 Daily Health and Safety Briefing Log

Attachment 5 Incident Report Form

Attachment 6 Near Miss Report Form

Attachment 7 Utility Clearance Logs

Attachment 8 Air Monitoring Plan

1.0 SCOPE OF WORK

This HASP was prepared for the use of Farallon personnel while performing the following tasks:

- Task 1: Operation and maintenance of the water treatment system;
- Task 2: Excavation of test pits to a depth of 15 feet below ground surface to confirm the depth and location of the slag material; and
- Task 3: Excavation and removal of secondary steel slag that reacts with surface water to elevate pH, including off-Site disposal of approximately 16,500 cubic yards of the slag.

The tasks will be conducted in a manner consistent with the methods and assumptions outlined in the draft *Cleanup Action Work Plan, Slag Disposal Beckwith Property Site, South 218th Street and 88th Avenue South, Kent, Washington* dated May 2010 and the *Wastewater Treatment, Monitoring, and Discharge Plan, Slag Disposal/Beckwith Property, Water Remediation System, 88th Avenue South and South 218th Street, Kent, Washington* dated December 4, 2009, both prepared by Farallon.

2.0 BACKGROUND INFORMATION

This cleanup action is being performed on behalf of Earle M. Jorgensen Company (EMJ) at the property located at the southeastern corner of South 218th Street and 88th Avenue South in Kent, Washington (herein referred to as the Site). The cleanup action will be conducted under Consent Decree No. 95-2-15301-1 (Consent Decree) entered into by the Washington State Department of Ecology (Ecology) and EMJ.

Secondary steel slag that contains lime ash that reacts with water to increase the pH (herein referred to as slag) was placed as fill on the Site between 1984 and 1990. Cleanup actions were conducted at the Site in 1995 through 1996 and in 2002 to mitigate the discharge of surface water with a pH above 8.5 from the stormwater detention pond located on the northeastern corner of the Site. Ecology confirmed that the requirements of the Consent Decree had been met and that further monitoring was no longer required.

The City of Kent measured pH levels of 12.5 to 12.8 in surface water discharging from seeps on the north and northwest sides of the Site in March 2009. Based on the pH levels measured in surface water leaving the Site in March 2009, Ecology required implementation of an interim action under the existing Consent Decree to mitigate discharge of surface water with a pH above 8.5. The interim action consists of capturing surface water for pre-treatment and disposal to the sewer system. The results of investigations conducted at the Site concluded that infiltration of precipitation and surface water bypassing the interceptor drain and barrier system (constructed as part of the previous cleanup actions at the Site, further discussed herein) react with the lime ash in the slag, elevating the pH in surface water that discharges from the seeps.

The cleanup action, presented in the Cleanup Action Work Plan prepared by Farallon to mitigate the discharge of surface water with a pH above 8.5, is removal of the slag with lime ash that reacts with surface water for off-Site disposal. Approximately 16,500 cubic yards of the slag will be removed from the Site. Ecology has reviewed and agreed to the selected cleanup action. The cleanup work is scheduled to begin in summer 2010.

3.0 DRUG AND ALCOHOL POLICY

It is Farallon's policy to maintain a drug-free workplace. Farallon has a responsibility to all of its staff members to provide a safe and inoffensive work environment, and a responsibility to its clients to provide accurate and consistent service. For these reasons, Farallon prohibits the following behavior by staff members in the field:

- Use of tobacco in any form by any person at any time in sensitive or hazardous areas that may pose a health and safety or environmental risk. The Site Health and Safety Officer (SHSO) may designate an area away from hazards that is safe for tobacco use;
- Possession or consumption of alcohol, or being under the influence of alcohol during field activities;
- Abuse of prescription and/or over-the-counter drugs in such a manner as to negatively impact performance or field safety; and
- Possession, use, sale, or being under the influence of illicit drugs while in the field or during any work hours.

Violation of any of the above codes of conduct is grounds for immediate removal from the project site and discipline in accordance with Farallon company policy. If an incident occurs as a result of an employee's actions, drug and alcohol testing will be performed in accordance with Farallon company policy.

4.0 WEAPONS POLICY

Farallon employees, contractors, subcontractors, and their employees working at the site are to ensure that they do not bring weapons onto the work site. Weapons include but are not limited to guns, knives, and explosives. Tools that are used during the course of field events, including but not limited to box knives, are exempt from this weapons policy. All vehicles and persons can be subjected to search while working at the property.

Failure to comply with the weapons policy can result in disciplinary action for the individual(s) involved in accordance with Farallon company policy.

5.0 INCIDENT PREPAREDNESS AND RESPONSE

Farallon employees and subcontractors working on site must be prepared to respond appropriately to an incident involving injury, illness, death, spills, or utility breaches. This section outlines the degree of preparedness required for employees at a work site, and describes the actions to be taken in the event of a health and safety incident.

5.1 HEALTH AND SAFETY PREPAREDNESS

All individuals working at the site are required to be familiar with the contents of this HASP. Additionally, the items on the following health and safety preparedness list should be reviewed prior to the commencement of work and during daily health and safety meetings:

- The directions to the hospital (provided in Attachment 2);
- The locations of first aid kits, personal eye washes, and fire extinguishers;
- The locations of the keys to site vehicles; and
- Hand sign language providing for the immediate stoppage of work (such as a horizontal hand movement in front of the neck).

Additional topics for daily health and safety meetings are included in Attachment 3, Potential Topics for Daily Health and Safety Meeting. Participation in daily health and safety meetings should be documented in the Daily Health and Safety Briefing Log (Attachment 4).

5.2 INJURY OR ILLNESS

If an injury or illness occurs, the following actions should be taken, regardless of the severity of the injury or illness:

- Stop work.
- Determine whether emergency response staff (e.g., fire, ambulance) are necessary. If so, dial 911 on a cell phone or the closest available telephone. Describe the location of the injured person and provide other details as requested. If an individual requires non-emergency medical care at a hospital, follow the directions to the nearest hospital, which are provided in Attachment 2. IF EMERGENCY MEDICAL CARE IS NEEDED CALL 911.
- Administer first aid to the individual immediately, using the first aid kit provided in the site vehicle. Use the bloodborne pathogens kit and personal eyewash, as needed.
- Notify the SHSO immediately. The SHSO is responsible for preparing and submitting an Incident Report form to Farallon's Health and Safety Coordinator (HSC) within 24 hours of the incident, and for notifying the employee's supervisor and the Principal in Charge. The Incident Report form is provided in Attachment 5.

- *All incidents must be reported to the HSC within 24 hours; however, the actual investigation need not be completed within 24 hours. A telephone message that includes the date, time, and general incident circumstances should be left at one of the following numbers if the HSC cannot be reached directly:*
 - HSC work phone: (425) 295-0800
 - HSC cell phone: (425) 466-1032
 - If the HSC cannot be located contact the Principal-in-Charge.
- The SHSO will assume responsibility during a medical emergency until emergency response personnel arrive at the site.

5.3 REPORTING PROCEDURES FOR MINOR CUTS, SCRATCHES, BRUISES, ETC.

Every occupational illness or injury is to be reported immediately by the employee to the SHSO. The SHSO is to complete the Incident Report form provided in Attachment 5, and report the incident to the HSC.

5.4 NEAR MISSES

A near miss is defined as an incident in which no personal injury is sustained and no property damage is incurred, but where injury and/or property damage could have occurred under slightly different timing or location.

In the event of a near miss, the following actions are to be taken:

- Stop work.
- Report the near miss to an SHSO immediately.
- The SHSO is to report the near miss to the HSC and complete the Near Miss Report form in Attachment 6.
- Resume work upon satisfactory resolution of the near-miss condition and documentation of the corrective action(s) taken by the SHSO.

5.5 MEDICAL INCIDENTS NOT REQUIRING AMBULANCE SERVICE

Medical incidents not requiring ambulance services include injuries and conditions such as minor lacerations, and sprains. In the event of an injury, an illness, or a condition that does not require ambulance service, the following actions are to be taken:

- Stop work.
- Administer first aid as necessary to stabilize the individual for transport to the hospital.
- The SHSO is to facilitate prompt transportation of the individual to the hospital. Directions to the nearest hospital are provided in Attachment 2.

- A representative of Farallon or the subcontractor is to drive the individual to the medical facility and remain at the facility until the individual is able to return to the jobsite, or arrangements for further care have been established.
- If the driver is not familiar with the route to the hospital, a second person who is familiar with the route is to accompany the driver and the injured employee to the hospital.
- If it is necessary for the SHSO to accompany the injured employee to a medical facility, provisions must be made for another employee who is trained and certified in first aid to act as the temporary SHSO before work at the jobsite can resume.
- If the injured employee is able to return to the jobsite the same day, he/she is to bring a statement from the doctor that provides the following information:
 - Date of incident
 - Employee's name
 - Diagnosis
 - Date he/she is able to return to work, and whether regular or light duty
 - Date he/she is to return to the doctor for a follow-up appointment, if necessary
 - Signature and address of doctor
- The SHSO is to complete the Incident Report form provided in Attachment 5, and report the incident to the HSC.
- If the injured employee is unable to return to the jobsite the same day, the employee who transported him/her should bring the statement from the doctor back to the jobsite. The information on this statement should be reported to the HSC immediately.

5.6 EMERGENCY CASES REQUIRING AMBULANCE SERVICE

In the event of an injury or illness that requires emergency response and transport to a hospital by ambulance the following actions should be taken:

- **Dial 911** to request ambulance service.
- Notify the SHSO.
- Administer first aid until the ambulance service arrives.
- One designated company representative should accompany the injured employee to the medical facility and remain there until final diagnosis, treatment plan, and other relevant information has been obtained.
- The SHSO is to complete the Incident Report form provided in Attachment 5, and report the incident to the HSC immediately.

5.7 EMPLOYEE DEATH, OR HOSPITALIZATION OF THREE OR MORE EMPLOYEES

The procedures outlined in Section 6.2 should be followed in the event of an employee injury or illness. If an employee fatality occurs, the HSC, local emergency personnel and the coroner must be notified immediately. **The HSC will initiate the required State of Washington Department of Labor and Industries and Occupational Safety and Health Administration (OSHA) notifications within 8 hours of a fatality or the hospitalization of three or more employees.**

5.8 RESPONSE TO SPILLS OR UTILITY BREACHES

The location of underground utilities (e.g., product, sewer, telephone, fiber optic) and facilities (e.g., USTs, septic tanks, utility vaults) is to be noted prior to commencement of intrusive subsurface work activities. Use the public and private locate services as required and complete the Utility Clearance Log (Attachment 7). If a utility line or tank is breached or a spill or release occurs, the event is to be documented on the Incident Report form provided in Attachment 5 as soon as possible. The date, time, name of the person(s) involved, actions taken, and discussions with other affected parties are to be included. The SHSO, Project Manager (PM), and client are to be notified immediately. The PM is to notify the regulatory authority and/or utility company, as necessary.

In the event of a spill or release, the following actions should be taken:

1. Stay upwind of the spill or release.
2. Don appropriate personal protective equipment (PPE).
3. Turn off equipment and other sources of ignition.
4. Turn off pumps and shut valves to stop the flow or leak.
5. Plug the leak or collect drippings, when possible.
6. Use sorbent pads to collect the product and impede its flow, if possible.
7. Dial 911 or telephone the local fire department immediately if a fire or another emergency situation develops.
8. Inform the Farallon PM of the situation.
9. Determine whether the client would like Farallon to repair the damage or would rather use an emergency repair contractor.
10. Advise the client of spill discharge notification requirements, and establish who will complete and submit the required forms. ***Do not report or submit information to an agency without the client's consent.*** Document each interaction with the client and regulators, and note in writing names, titles, authorizations, refusals, decisions, and commitments to any action.

11. Do not transport or approve transportation of contaminated soils or product until proper manifests have been completed and approved. Be aware that soil and/or product may meet criteria for hazardous waste.
12. Do not sign manifests as a generator of wastes. Contact the PM to discuss waste transportation.

5.9 NOTIFICATIONS

A spill or release requires completion of an Incident Report form (provided in Attachment 5) per Farallon's Health and Safety program. **The PM must involve the client and/or generator in the incident reporting process. The client and/or generator is under obligation to report the incident to the appropriate government agency(ies). If the spill extends into waterways, the Coast Guard and the National Response Center must be notified immediately by the client or with his permission (800 424-8802).**

5.10 SHUTOFF VALVES AND/OR SWITCHES FOR UTILITIES AND PRODUCTS

Before starting work locate and list below the location of utility and product line shutoff valves and switches on the project site. Review the location of shutoff valves and switches with field personnel before beginning work.

The shutoff valves and/or switches for electrical, natural gas, gasoline, water lines, etc. are as follows:

To shut down the waste water treatment system, turn the generator off. The off switch is located inside the generator panel next to where the system power is plugged into the generator.

6.0 EMERGENCY RESPONSE AND EVACUATION PLAN

Farallon personnel and subcontractors working on site are to be aware of site-specific emergency and evacuation procedures, including alarm systems and evacuation plans and routes. If an incident occurs that requires emergency response, such as a fire or spill, **CALL 911 and request assistance**. Farallon staff, subcontractors, and/or others working in an area where an emergency occurs are to evacuate to a safe location away from the incident area, preferably upwind, and take attendance.

For this project, the emergency evacuation gathering location is as follows:

There are two gathering places for an emergency (such as a spill):

- At the northeast corner of the Site along South 218th Street; or
- At the southeast corner of the Site at the gravel entrance.

If the emergency obstructs the route, Farallon personnel and subcontractors are to move to an open area upwind of the hazard area and remain there until instructed by emergency response personnel (e.g., police, fire, ambulance personnel, paramedics) to do otherwise.

Subcontractors have the responsibility to account for their own employees and provide requested information to emergency response personnel immediately upon request. Farallon staff, subcontractors, and/or contractors may not reenter the scene of the emergency without specific approval from emergency response personnel.

7.0 LOCAL EMERGENCY CONTACT NAMES AND TELEPHONE NUMBERS

Local emergency response personnel can be contacted at the following numbers. Directions and a map to the hospital are included in Attachment 2.

Emergency Contact	Name and Location	Telephone No.
Hospital	Valley Medical Center 24920 104th Avenue Southeast Kent, Washington	(253) 395-2000
Police	Kent Police Department 220 4th Avenue South Kent, Washington	911 or (253) 856-5800
Fire	Kent Fire Department 24611 116th Avenue Southeast Kent, Washington	911 or (253) 856-4300
National Response Center		1-800-424-8802
Washington State Department of Ecology		(360) 407-6300
Poison Control		1-800-424-5555

8.0 PROJECT PERSONNEL AND RELEVANT INFORMATION

Questions about this project that are posed by neighbors, the press, or other interested parties should be directed to the Principal in Charge at Farallon: (425) 295-0800.

EMJ Slag Site 831-022	General Project Responsibilities	Field Personnel Training Dates			Medical Surveillance Date
		40-Hour HAZWOPER	8-Hour Refresher	CPR/ First Aid	
Site Health and Safety Officer Ken Scott Office: (425) 295-0800 Cell: (425) 765-1134	Implement this HASP. Has authority to stop work. Perform air quality tasks. Take charge of all incidents. Perform excavation, test-pitting, and water quality work at Site. Review subcontractor's HASP.	09-1995	01/ 18/10	11/08	11/5/2009
Farallon Personnel Heidi Fischer Office (425) 295-0800 Cell: (425) 463-6022	Be familiar with HASP requirements and the Farallon Accident Prevention Program and Hazardous Waste Operations Program	07-19-2007	01/ 18/10	11/08	11-12-2009
Project Manager Amy Essig Desai Office: (425) 295-0810 Cell: (425) 241-1540	Oversee work of staff. Provide immediate support upon notice of any incident.	NA	NA	NA	NA
Principal-in-Charge Peter Jewett Office (425) 295-0800 Cell: (425) 765-3356	Provide immediate support upon notice of any incident.	NA	NA	NA	NA
Health and Safety Coordinator Richard McManus Office (425) 295-0800 Cell: (425) 466-1032	Provide support in implementing HASP. Provide immediate support upon notice of any incident.	NA	NA	NA	NA
Client Contact Gilbert Leon Office: (323) 923-6120	Provide known analytical data from work performed by others. Provide notice of site hazards. Provide access to site. Provide information regarding available emergency supplies at the site.	NA	NA	NA	NA

9.0 POTENTIAL AIRBORNE CONTAMINANTS

The potential airborne contaminants of concern are listed in the table on the following page, and the scope for airborne contaminant sampling is provided below. The table should be reviewed, and any questions directed to the SHSO.

Personal air monitoring will be conducted on employees participating in activities that involve excavation and handling slag. This air monitoring will be performed in accordance with the Air Monitoring Plan (Attachment 8). The Air Monitoring Plan outlines detailed procedures for the following air monitoring protocol:

- Employee breathing zone air sampling will be performed using personal battery-powered sampling pumps fitted with pre-weighed filters in accordance with applicable NIOSH/OSHA/WISHA sampling protocols whenever dust-generating work is being performed. These samples will be analyzed for total dust (mg/m^3) and lime dust. Concurrently, breathing zone dust sampling will be conducted with a personal real-time dust monitor.
- During initial work activities that involve slag excavation and handling, employees will use Level C PPE that includes air purifying respirators equipped with dust particulate filters.
- Data derived from breathing zone air sampling will be used to downgrade or upgrade PPE requirements. In addition, the laboratory analytical results for total dust and lime dust will be compared with the real-time total dust results to establish a correlation between real-time total dust concentrations and 8-hour time-weighted average total metals/total dust samples. Based on the strength of this correlation, real-time dust concentrations may then be used to establish exposure control limits for upgrading/downgrading PPE.

**POTENTIAL AIRBORNE CHEMICALS ON SITE FOR THIS PROJECT
REVIEW THIS TABLE AND CONTACT THE SHSO WITH ANY QUESTION**

Chemical (or Class)	OSHA PEL ACGIH TLV	Other Pertinent Limits	Monitoring Equipment	Routes of Exposure or Irritation	Acute Health Effects	Chronic Health Effects/ Target Organs
Hydrated Lime Dust	PEL 5 mg/m ³	Level for Respirator not available. Level of Work Stoppage ½ IDLH not available.	Filter/Sample Pump	Eye, skin, nose, and respiratory system; ingestion	Eye irritant, skin burns, cough, shortness of breath, vomiting, diarrhea	Chemical bronchitis/lungs, skin irritation or dermatitis, blindness
Dust	PEL 15 mg/ m ³ total 5 mg/ m ³ respirable	Level for Respirator Use 25 mg/m ³ as total dust and 15 mg/m ³ as respirable dust; Level of Work Stoppage ½ IDLH – Not Available	Laser particle counter	Eye irritant, skin, nose, throat, conjunctivitis	Dyspnea (breathing difficulty), cough, copious sputum, chest pain, fever, cyanosis.	Cardiovascular system, respiratory system, eyes, throat, nose, skin. Pulmonary edema.

NOTES:

ACGIH = American Conference of Governmental Industrial Hygienists

IDLH = immediately dangerous to life or health

mg/m³ = milligrams per cubic meter

OSHA = Occupation Safety and Health Administration

PEL = permissible exposure limit (time weighted average based on a 10-hour workday or 40-hour work week).

Skin = skin absorption

TLV = threshold limit value set by ACGIH

10.0 POTENTIAL SITE HAZARDS AND APPROPRIATE PRECAUTIONS

The following tables list potential hazards and appropriate precautions associated with planned field work.

10.1 WATER TREATMENT SYSTEM OPERATION AND MAINTENANCE

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Mobilize with proper equipment/supplies for O&M.	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Vehicle accident. Lifting hazards. Delay or improper performance of work due to improper equipment on site.	Follow safe driving procedures. Employ safe lifting procedures. Make sure subcontractors are aware of their responsibilities for labor, equipment, and supplies. Review HASP and permit conditions and gather necessary PPE.
Set up necessary traffic control.	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Struck by vehicle during placement. Vehicle accident as a result of improper traffic control equipment placement.	Use buddy system for placing traffic control, if necessary. Reference traffic control plan section of HASP (may include specific requirements based on permits).
Unload and set up test equipment.	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Struck by vehicle. Trip hazards. Accident when maneuvering equipment. Lifting hazard. Electrical hazard. Adverse impacts to station sales.	Place equipment away from pump islands or other high traffic areas. Store hoses and electrical cords neatly and protect with traffic control equipment (e.g., cones, barricades). Provide hand signals and guidance to driver, as needed, when placing testing equipment trailers or other large equipment. Visually inspect equipment (e.g., fire extinguisher on board/available on site, no damaged hoses or electrical lines, pressurized hoses secured with whip-checks or adequate substitute, all vapor and/or water hoses firmly connected, equipment grounded). Use proper lifting techniques. Use GFIC on generators or other electrical equipment; inspect cords.
Set up exclusion zone(s) and work station.	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Struck by vehicle during setup. Slip/fall hazards.	Implement exclusion zone setup instructions of HASP. Set up work station with clear walking paths to all testing locations. Face oncoming traffic.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Gauge water levels and product thickness (where applicable).	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Back strain, inhalation, or dermal exposure to chemical hazards. Repetitive motion. Eye injury from back pressure in wells. Traffic hazards.	Wear any additional PPE and initiate air quality monitoring in accordance with HASP. Maintain safe distance from wellheads. Bend at knees, rather than waist. Decontaminate equipment between measurements. Face oncoming traffic.
Commence performing O&M.	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Explosion or fire. Trip hazards. Unauthorized release of contaminants. Eye injury from pressurized air or shrapnel from burst piping. Burn from heated piping or motors. Clothing caught on turning vanes on compressor and shaft. Exposure to contaminants (e.g., inhalation, dermal contact). Noise. Electrical hazards.	Follow equipment-specific operation instructions. Ensure that connections with barbed fittings on pressure gauges are secure. Be conscious of amount of torque placed on PVC connections to avoid breaking. Monitor pressure conditions; do not exceed pressure ratings for any component involved. Watch proximity to heated piping and contact with mufflers, motors, manifolds. Monitor influent vapor and oxygen concentrations, if applicable. Keep work area tidy and free of loose equipment. Monitor treatment system and collect data to ensure discharge is within permit parameters and capacity of any storage containers (e.g., concentrations, flow rates). Wear PPE in accordance with HASP (including ear protection, as necessary). Ensure lockout/tagout of all electrical equipment that may be handled. Use GIFC; inspect cords.
Shut down system (if necessary).	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Unauthorized release of contaminants from back pressure. Eye injury from pressurized air or shrapnel from burst piping. Burn from heated piping or motors. Exposure to contaminants (e.g., inhalation, dermal contact).	
Collect samples in	Safety glasses or goggles, hard hat,	Cross-contamination,	Label samples in accordance with sampling plan.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
accordance with sampling plan.	steel-toed and -shank boots, hearing protection, gloves.	improper sample labeling or storage, exposure to site contaminants. Repetitive motion. Cuts from colorimetric tubes. Body position.	Keep samples stored in proper containers, at correct temperature, and away from work area. Perform air monitoring and wear proper PPE.
Store waste (e.g., water, carbon canisters) in accordance with site-specific requirements.	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves	Back strain. Traffic hazard. Improper storage or disposal. If disposing through on-site treatment system, damage or injury from improper use of equipment.	Use proper equipment to transport waste containers (e.g., pumps, drum dollies). Have proper storage containment and labeling available on site. Place materials in isolated location away from traffic and other site functions. Label waste. Coordinate proper disposal off site (where applicable). Review instructions for use of on-site treatment systems.
Clean site/demobilize.	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Traffic hazard. Lifting hazards. Safety hazard left on site.	Use buddy system, as necessary, to remove traffic control. Use proper lifting techniques. Leave site clean of refuse and debris. Notify station personnel of departure and location of any stored waste.

10.2 EXCAVATION ACTIVITIES

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Clear excavation locations.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves.	Traffic hazards, overhead and underground installations, product releases, property damage, dealer inconvenience.	<ul style="list-style-type: none"> • Refer to Utility Clearance Log. • Coordinate with facility contact (or designee) to minimize potential conflicts. • Review proposed locations against available construction drawings and known utilities, tanks, product lines, etc. • Mark out the proposed excavation locations. • Call the underground utility locating service for public line location clearance. Obtain a list of utilities being contacted. If necessary, coordinate private line locator for private property.
Set up necessary traffic control.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves.	Being struck by vehicle during placement. Vehicle accident as a result of improper traffic control equipment placement.	<ul style="list-style-type: none"> • Use buddy system to place traffic control. • Implement traffic control plan as required.
Set up exclusion zone(s) and stockpile area and establish work areas/heavy equipment pathways.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves.	Injury or exposure to public or other onsite personnel. Slip or fall hazards. Onsite vehicular accident with heavy equipment.	<ul style="list-style-type: none"> • Implement exclusion zone set-up instructions. • Establish clear walking paths between work stations.
Hand digging/post-holing where necessary to expose and protect underground installations as needed.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves. Respirator with organic vapor cartridges, chemical-resistant gloves, chemical-resistant apron as required.	Damage to lines and associated physical hazards or property damage. Back strain. Injury or vehicle damage from falling into a hole.	<ul style="list-style-type: none"> • Use hand tools whenever possible. • Use proper lifting techniques. • Barricade or cover holes until job has been completed.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Assist with set up of heavy equipment.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves.	Damage caused by heavy equipment while accessing set-up location. Being struck by equipment.	<ul style="list-style-type: none"> • Verify a clear pathway to excavation and stockpiling locations. • Provide hand signals and guidance to driver as needed to place rig. • Visually inspect equipment (fire extinguisher on board, no oil or other fluid leaks, cabling and associated equipment in good condition, pressurized hoses secured with whip-checks or adequate substitute, jacks in good condition). • Maintain eye contact with operator.
Commence excavation.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves. Respirator with dust cartridges and gloves as required.	Heat or cold exposure. Exposure to chemical hazards. Hitting an underground or overhead utility. Flammable or oxygen-deficient atmosphere from accumulated vapors. Trip or fall. Side wall cave-in. Equipment failure. Noise.	<ul style="list-style-type: none"> • Monitor weather conditions and take breaks as needed for cold or hot weather. • Conduct air monitoring as presented in Attachment 8. Include Lower Explosive Limit (LEL) and oxygen (O₂) monitoring. If >10% LEL or O₂ <19.5%, discontinue work or ventilate area with explosion-proof equipment. • Maintain required excavation set-backs for workers and equipment. Monitor condition of side walls and surrounding ground conditions. • Keep work area clear of tripping or slipping hazards. • Perform periodic visual inspections of heavy equipment and keep equipment a minimum of 5 feet from excavation edge, or one foot away from the edge for every foot of depth, if greater than 5 feet deep. • Perform necessary soil classification. Slope or bench walls, or shore excavation to prevent cave-in. Keep all spoils > 2 feet from excavation edge. Keep excavation entry controlled and equipped with required ladders and crosswalks.
Collect samples in accordance with sampling plan.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves. Respirator with organic vapor cartridges, chemical-resistant gloves, chemical-resistant apron as required.	Cave-in of side wall if entering excavation. Injury from heavy equipment. Exposure to site contaminants.	<ul style="list-style-type: none"> • Stay out of excavation whenever possible (collect samples from backhoe bucket). • Use agreed-upon hand signals with heavy equipment operators. • Monitor air around excavation in accordance with the protocol presented in Attachment 8.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Store excavated materials according to site-specific requirements.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves. Respirator with organic vapor cartridges, chemical-resistant gloves, chemical-resistant apron as required.	Exposure to public. Traffic hazard, obstruction, or inconvenience to business operation. Improper storage or disposal.	<ul style="list-style-type: none"> Have necessary storage containment and labeling available onsite. Place materials in isolated location away from traffic and other site functions. Stockpile excavated materials on suitable plastic or in appropriately designed container. Cover with plastic, and barricade access to waste in accordance with local regulations. Coordinate proper disposal offsite, where applicable.
Backfill excavation.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves. Respirator with dust cartridges and gloves as required.	Being struck by heavy equipment. Side wall collapse. Damage or accidents resulting from subsequent subsidence.	<ul style="list-style-type: none"> Use agreed-upon hand signals with heavy equipment operators. Compact soils to meet specifications. Maintain eye contact with equipment operators.
Clean site. Demobilize.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves.	Traffic. Safety hazard left on site. Lifting hazards.	<ul style="list-style-type: none"> Use buddy system to remove traffic control, as necessary. Leave site clear of refuse and debris. Notify business personnel of departure. Use proper lifting techniques or use mechanical assistance.
Package and deliver samples to laboratory.		Back strain. Traffic accidents	<ul style="list-style-type: none"> Handle and pack bottles carefully (e.g., bubble wrap bags). Use proper lifting techniques. Apply safe driving practices

Job Steps		Personal Protective Equipment	Potential Hazard	Critical Actions
General				
Typical work.		Steel-toed and -shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, and leather gloves for non-chemical aspects of the work. If equipment contamination is suspected, wear chemical-resistant gloves during decontamination of equipment.	Weather-related incidents: automobile accidents, slips, or falls.	<ul style="list-style-type: none"> • Check weather reports daily. Project visits are not to be performed during inclement weather. Sampling may be performed during light rain mist. Wear raincoats. • Drive at the speed limit or less as needed to keep safe distance from vehicle in front. Avoid short stops.
No eating, drinking, or smoking on-site. No contact lenses to be worn on-site. No facial hair that would interfere with respirator fit.				
A safety meeting will be held each day, even if only one person is working on the project on any given day.				<ul style="list-style-type: none"> • Topics are always to include the work scheduled for that day, and restatement of hazards and the means to avoid them. Other topics may include sampling in general, and advances in technology and how they may be applied to the project. Use the <i>Daily Health and Safety Briefing Log</i> provided in Attachment 4 to log the topics discussed.

11.0 WASTE CHARACTERISTICS

Waste anticipated to be generated on the project site:

Type(s): ☒ Liquid ☒ Solid ☐ Sludge ☒ Slag & Lime Ash

The approximate volume for each anticipated waste stream:

Waste: Groundwater with high pH and metals. Approximate Volume: 2,000-6,000 gal/day _____

Waste: Soil with high pH _____ Approximate Volume: 16,500 cubic yards _____

Waste: _____ Approximate Volume: _____

Characteristics:

☒ Corrosive ☐ Flammable/Ignitable ☐ Radioactive ☐ Toxic
☐ Reactive ☐ Unknown ☐ Other (*specify*) _____

ATTACHMENT 1
HEALTH AND SAFETY PLAN ACKNOWLEDGEMENT
AND AGREEMENT FORM

HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

HEALTH AND SAFETY PLAN ACKNOWLEDGMENT AND AGREEMENT FORM

(All Farallon and subcontractor personnel must sign)

This Health and Safety Plan (HASP) has been developed for the purpose of informing Farallon employees of the hazards they are likely to encounter on the project site, and the precautions they should take to avoid those hazards. Subcontractors and other parties at the site must develop their own HASP to address the hazards faced by their own employees. Farallon will make a copy of this HASP available to subcontractors and other interested parties to fully disclose hazards we may be aware of, and to satisfy Farallon's responsibilities under the Occupational Safety and Health Administration (OSHA) Hazard Communication standard. Similarly, subcontractors and others on site are required to inform Farallon of any hazards they are aware of or that their work on site might possibly pose to Farallon employees, including but not limited to Material Safety Data Sheets for chemicals brought on site. This plan should NOT be understood by contractors to provide information pertaining to all of the hazards that a contractor's employees may be exposed to as a result of their work.

All parties conducting site activities are required to coordinate their activities and practices with the project Site Health and Safety Officer (SHSO). Your signature below affirms that you have read and understand the hazards discussed in this HASP, and that you understand that subcontractors and other parties working on site must develop their own HASP for their employees. Your signature also affirms that you understand that you could be prohibited by the SHSO or other Farallon personnel from working on this project for not complying with any aspect of this HASP.

Name	Title	Signature	Company	Date

ATTACHMENT 2
DIRECTIONS TO HOSPITAL

HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

Get Directions My Maps

22100 88th south kent
Start address

Renton, WA 98055 (Valley Medical Center, Direc
Get Directions

Add Destination - Show options
By car

Also available: Public TransitWalking

Driving directions to Valley Medical Center:

Directions to VMC
3.6 mi – about 8 mins

22100 88th Ave S

Kent, WA 98031

1. Head **northeast** on **88th Ave S** toward **S 218th St** 13 ft

2. **88th Ave S** turns **right** and becomes **S 218th St** 0.6 mi

3. Turn **right** at **S 216th St** 0.6 mi

4. Turn **left** at **108th Ave SE/ Mill Creek Park/ WA-515** 2.3 mi

Continue to follow 108th Ave SE/WA-515

5. Turn **left** at **SE 180th St** 387 ft

6. Turn **right** 253 ft

7. Turn **left** 125 ft

Destination will be on the right

Valley Medical Center, Directions to VMC

Renton, WA 98055

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Map data ©2009 . Tele Atlas

ATTACHMENT 3
POTENTIAL TOPICS FOR DAILY HEALTH AND SAFETY MEETING

HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

POTENTIAL TOPICS FOR DAILY HEALTH AND SAFETY MEETING

- ☐ Emergency response plan, emergency vehicle (full of fuel) and muster point
- ☐ Route to medical aid (hospital or other facility)
- ☐ Work hours. Is night work planned?
- ☐ Hand signals around heavy equipment
- ☐ Traffic control
- ☐ Pertinent legislation and regulations
- ☐ Above- and below-ground utilities (energized or de-energized)
- ☐ Material Safety Data Sheets
- ☐ Reporting an incident: to whom, what, why, and when to report
- ☐ Fire extinguisher and first aid kit locations
- ☐ Excavations, trenching, sloping, and shoring
- ☐ Personal protective equipment and training
- ☐ Safety equipment and training
- ☐ Emergency telephone location(s) and telephone numbers (in addition to 911)
- ☐ Eye wash stations and washroom locations
- ☐ Energy lock-out/tag-out procedures. Location of “kill switches,” etc.
- ☐ Weather restrictions
- ☐ Site security. Site hazards. Is special waste present?
- ☐ Traffic and people movement
- ☐ Working around machinery (both static and mobile)
- ☐ Sources of ignition, static electricity, etc.
- ☐ Stings, bites, large animals, and other nature-related injuries and conditions
- ☐ Working above grade
- ☐ Working at isolated sites
- ☐ Decontamination procedures (for both personnel and equipment)
- ☐ How to prevent falls, trips, sprains, and lifting injuries
- ☐ Right to refuse unsafe work
- ☐ Adjacent property issues (e.g., residence, business, school, daycare center)

ATTACHMENT 4
DAILY HEALTH AND SAFETY BRIEFING LOG

HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

DAILY HEALTH AND SAFETY BRIEFING LOG

Date	
Start Time	
Issues Discussed	
1. Contaminants of concern (lime ash, metals, pH)	
2. Wearing proper PPE (hardhat, safety glasses, steel toe boots, reflective safety vest).	
3. Slip, trip, and fall hazards	
4. Excavator safety, making eye contact with excavator operator.	
5. Hospital route, and first-aid kit locations	
Attendees	
Print Name	Signature
Meeting Conducted by: Ken Scott	
Name (Site Health and Safety Coordinator)	Signature

**ATTACHMENT 5
INCIDENT REPORT FORM**

HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

INCIDENT REPORT

NEAR MISS, ACCIDENTAL INJURY, OCCUPATIONAL ILLNESS, OR WORK PLACE INCIDENT

INCIDENT TYPE (TO BE COMPLETED BY HEALTH AND SAFETY COORDINATOR)				INCIDENT DATE
<input type="checkbox"/> FATALITY <input type="checkbox"/> LOST WORKDAY (LW) <input type="checkbox"/> LW RESTRICTED DUTY <input type="checkbox"/> OSHA MEDICAL OR ILLNESS WITHOUT LW <input type="checkbox"/> FIRST AID	<input type="checkbox"/> INDUSTRIAL NON-RECORDABLE <input type="checkbox"/> NON-INDUSTRIAL <input type="checkbox"/> OFF-THE-JOB INJURY <input type="checkbox"/> MOTOR VEHICLE ACCIDENT <input type="checkbox"/> FIRE	<input type="checkbox"/> SPILL/LEAK <input type="checkbox"/> PRODUCT INTEGRITY <input type="checkbox"/> EQUIPMENT <input type="checkbox"/> BUSINESS INTERRUPTION	<input type="checkbox"/> GENERAL LIABILITY <input type="checkbox"/> CRIMINAL ACTIVITY <input type="checkbox"/> NOTICE OF VIOLATION <input type="checkbox"/> NEAR MISS	
This report must be completed by the employee or Health and Safety Coordinator immediately upon learning of the incident. The completed report must be reviewed and signed by a Farallon Principal within 24 hours of the incident, even if employee is not available to review and sign. Employee or employee's doctor must submit a copy of the doctor's report, and any subsequent exams, to Richard McManus at Farallon within 24 hours of the initial exam. After hours or weekends, telephone Mr. McManus via cell phone: (425) 466-1032.				
EMPLOYEE INFORMATION				
LAST NAME	FIRST NAME AND MIDDLE INITIAL	TITLE	DATE OF BIRTH	
EMPLOYMENT STATUS <input type="checkbox"/> FULL-TIME <input type="checkbox"/> PART-TIME <input type="checkbox"/> HOURLY-AS-NEEDED			LENGTH OF EMPLOYMENT	
DATE OF INJURY OR ONSET OF ILLNESS (MM/DD/YYYY)			TIME OF EVENT OR EXPOSURE <input type="checkbox"/> AM <input type="checkbox"/> PM	
INJURY OR ILLNESS INFORMATION				
EXACT LOCATION OF INCIDENT (GEOGRAPHICAL LOCATION, FLOOR, BUILDING, ETC.)				
COUNTY		ON EMPLOYER'S PREMISES? <input type="checkbox"/> YES <input type="checkbox"/> NO		
COMPLETE DESCRIPTION OF INCIDENT; INCLUDE SPECIFIC ACTIVITY AT TIME OF INCIDENT (e.g., Lifting, Pushing, Walking)				
DESCRIBE THE EQUIPMENT, MATERIALS, OR CHEMICALS THAT DIRECTLY HARMED THE EMPLOYEE (e.g., the machine that the employee struck or that struck the employee; the vapor inhaled; the material swallowed; what the employee was lifting or pulling)				
DESCRIBE THE SPECIFIC INJURY OR ILLNESS (e.g., cut, strain, fracture, skin rash)				
BODY PART(S) AFFECTED (e.g., back, left wrist, right eye)				
DATE EMPLOYER NOTIFIED			TO WHOM REPORTED	
MEDICAL PROVIDER INFORMATION (e.g., hospital, doctor, clinic)				
NAME AND ADDRESS OF MEDICAL CARE PROVIDER				TELEPHONE NO.
TREATED IN EMERGENCY ROOM? <input type="checkbox"/> NO <input type="checkbox"/> YES			HOSPITALIZED OVERNIGHT AS INPATIENT? <input type="checkbox"/> NO <input type="checkbox"/> YES	

INCIDENT REPORT, CONTINUED

SEVERITY OF INJURY OR ILLNESS	TIME LOSS (Check all that apply)	PHASE OF WORKDAY
<input type="checkbox"/> NO TREATMENT REQUIRED	<input type="checkbox"/> NO TIME LOSS	<input type="checkbox"/> PERFORMING NORMAL WORK DUTIES
<input type="checkbox"/> FIRST AID ONLY	<input type="checkbox"/> RETURN TO WORK THE NEXT DAY	<input type="checkbox"/> MEAL PERIOD
<input type="checkbox"/> MEDICAL TREATMENT	<input type="checkbox"/> RESTRICTED ACTIVITY:	<input type="checkbox"/> REST PERIOD
<input type="checkbox"/> FATALITY (ENTER DATE):	BEGIN DATE	<input type="checkbox"/> ENTERING/LEAVING
	RETURN DATE	<input type="checkbox"/> CHRONIC EXPOSURE
	<input type="checkbox"/> LOST WORKDAY, NOT AT WORK:	<input type="checkbox"/> OTHER (SPECIFY):
	BEGIN DATE	
	RETURN DATE	

MOTOR VEHICLE ACCIDENT		PROFESSIONAL DRIVER?	
		<input type="checkbox"/> YES <input type="checkbox"/> NO	
TOTAL YEARS DRIVING	COMPANY VEHICLE? <input type="checkbox"/> YES <input type="checkbox"/> NO	VEHICLE TYPE	
NO. OF VEHICLES TOWED	NO. OF INJURIES	NO. OF FATALITIES	
THIRD PARTY INCIDENTS			
NAME OF OWNER	ADDRESS	TELEPHONE NO.	
DESCRIPTION OF DAMAGE			
INSURANCE INFORMATION			
WITNESS NAME	ADDRESS	PHONE NO.	
WITNESS NAME	ADDRESS	PHONE NO.	
REVIEWED BY			
NAME (PRINT)	SIGNATURE	TITLE	DATE

**ATTACHMENT 6
NEAR MISS REPORT FORM**

**HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington**

Farallon PN: 831-022

NEAR MISS REPORT

This report is to be filled out by any employee involved in or witnessing a near miss. A near miss is an incident that did not result in any personal injury, property damage, or work interruption. It is a very important indicator of potentially harmful future accident.

Project No. _____ Project Name _____

Project Address _____

Date of incident: _____ Time: _____ ☐ AM ☐ PM

Exact location of incident _____

Description of incident or potential hazard _____

Corrective action taken _____

Employee Signature _____ Date _____

Printed Name _____

Supervisor Signature _____ Date _____

Printed Name _____

**ATTACHMENT 7
UTILITY CLEARANCE LOGS**

HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

UTILITY CLEARANCE LOG

Project: _____ **Project Number:** _____

Location: _____ **Date:** _____

Instructions: This log must be completed by a Farallon staff member prior to any Farallon-directed excavation (e.g., test pit excavation) or drilling operations.

DRILLING OR EXCAVATION WORK MAY NOT PROCEED UNTIL UTILITY LOCATES HAVE BEEN COMPLETED.

(See One-Call Notification Procedure on Reverse Side of This Form)

Farallon is responsible for having underground utilities and structures located and marked when drilling or directing test pit excavation operations. Any drilling or excavation within two feet of a marked utility must be done with hand tools.

Owners of underground utilities are required by law to mark underground facilities on public and private property. Owners of underground utilities are **not required** to mark existing service laterals or appurtenances. Utility owners in Washington are required to subscribe to the one call service.

Private utility locate services must be hired to locate service laterals and other buried utilities (e.g., on-site electric distribution lines, irrigation pipes) on private property.

Remark after 10 days or maintain as appropriate.

Locate Check List

Map attached showing drilling or excavation sites and known utilities ☐

Attach copy of One-Call Utility Notification Ticket (<http://www.searchandstatus.com/>) ☐

One-Call Utility Notification Ticket Number: _____

Attach copy of Private Locate Receipt ☐

Photos taken of all excavation/drilling locations (Download to project file) ☐

Facility Contact/Manager Approval: Name _____ Signature _____

Utilities and Structures

Type	Utility Name	Public Utilities Marked	Private Utilities/Laterals Marked	How Marked ¹
Petroleum product lines				
Natural gas line				
Water line				
Sewer line				
Storm drain				
Telephone cable				
Electric power line				
Product tank				
Septic tank/drain field				
Other				

¹Flags, paint on pavement, wooden stakes, etc.

Farallon Consulting, L.L.C.

Field Team Leader _____ Date _____

<i>Electric</i> RED	<i>Gas-Oil-Steam</i> YELLOW	<i>Comm-CATV</i> ORANGE	<i>Water</i> BLUE/PURPLE	<i>Sewer</i> GREEN	<i>Temp Survey</i> PINK
-------------------------------	---------------------------------------	-----------------------------------	------------------------------------	------------------------------	-----------------------------------

ONE-CALL UTILITY LOCATE REQUEST PROCEDURE
THE ONE-CALL UTILITY LOCATE CENTER REQUIRES 48 HOURS TO MARK
UTILITIES BEFORE YOU CAN DIG OR DRILL

In Washington Call 1-800-424-5555 In Oregon Call 1-800-332-2344

Washington state law requires that “before commencing any excavation” that the excavator or driller provide notice to all owners of underground utilities by use of the one-call locator service. Further, the law requires that the excavator/driller shall not dig/drill until all known utilities are marked. To fully comply with the law the following utility locate procedure is required:

1. **Call before you dig or drill** – Notify the One-Call Utility Notification Center (OCUNC) a minimum of two full business days before digging or drilling. Document your notification on a Utility Locate Telecon Form. Provide the following information (Bold indicates required information):
 - a. **Your name, phone number, company name, mailing address, Farallon Account Number #25999**
 - b. The name and phone number of an alternate contact person
 - c. If the work is taking place within 10 feet of any overhead power lines.
 - d. **What type of work is being done.**
 - e. **Who the work is being done for.**
 - f. **The county and city the work is taking place in.**
 - g. **The address or the street where the work is taking place.**
 - h. The nearest cross street.
 - i. The distance and direction of the worksite from the intersection.
 - j. **Marking instructions, (specific instructions as to where the work is taking place).**
 - k. Township, range, section, and quarter section of the worksite.
2. **Record the utilities that will be notified** – OCUNC will tell you what utilities are on or adjacent to the site based on their database. Record the name of the utility on the reverse side of this form.
3. **Confirm the utilities notified have marked the utilities in the field** – Before digging or drilling walk the site and confirm that the utilities that were notified marked the utilities in the field.
4. **If a locate appears to be missing** – If a utility locate appears to be missing, and the utility has not notified you that there are no utilities in the area, call OCUNC and:
 - a. **Provide the OCUNC locate number**
 - b. **Clearly state which utility has not been marked. The call is being recorded.**
 - c. **Ask for a contact at that utility.**
5. **Call contact(s) for missing utility(s)** – Call the contacts for missing utility locates and determine why no locate appears in field.
6. **Record reason(s) for missing locate(s)** – There may be reasons that locates do not appear in the field (e.g., no utilities are located on the site, utility has been abandoned).

<i>Electric</i> RED	<i>Gas-Oil-Steam</i> YELLOW	<i>Comm-CATV</i> ORANGE	<i>Water</i> BLUE/PURPLE	<i>Sewer</i> GREEN	<i>Temp Survey</i> PINK
-------------------------------	---------------------------------------	-----------------------------------	------------------------------------	------------------------------	-----------------------------------

Record the reason given. IF THEY ARE LATE – YOU WAIT TO DRILL OR DIG. If the utility failed to mark within the required two days they are liable for delay costs.

7. **Hand dig within two feet** – When digging or drilling within two feet of any marked utility the utility must be exposed first by using hand tools.

<i>Electric</i> RED	<i>Gas-Oil-Steam</i> YELLOW	<i>Comm-CATV</i> ORANGE	<i>Water</i> BLUE/PURPLE	<i>Sewer</i> GREEN	<i>Temp Survey</i> PINK
-------------------------------	---------------------------------------	-----------------------------------	------------------------------------	------------------------------	-----------------------------------

FARALLON CONSULTING, L.L.C.
975 5th Avenue Northwest
Issaquah, Washington
98027

TELEPHONE CONVERSATION

Date: _____ Time: _____

Project Name: _____

Job No: _____

Phone No: 1-800-424-5555 WA, 1-800-332-2344
OR _____

Prepared By/Initials: _____

Call: ☐ Placed ☐ Received

Contact/Title: _____

Agency/Region: **One-Call Utility Notification Center**

PROJECT: _____

1. Your name and the Farallon Account Number #25999 _____

2. What is the type of work being conducted? (Environmental drilling, test pit excavation)

3. Who is the property owner? _____

4. County and city where work is being done? _____

5. Address or street where work is taking place? _____

Q-S-T-R **SW-7-22-5** _____

6. Nearest cross street? _____

7. Distance and direction of the worksite from the intersection? _____

8. Marking Instructions (Generally locate on entire site including rights-of-way and easements):

9. What time and date will the locate be completed? _____

10. Utility Locate Request Number? _____

11. Utilities that will be notified? _____

12. Any Overhead Concerns? No _____

cc: _____ Page _____ of _____

Note: Bold indicates required information

ATTACHMENT 8
AIR MONITORING PLAN

HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

AIR MONITORING PLAN

**ATTACHMENT 8 OF THE
EXCAVATION CLEANUP, ALTERNATIVE PRE-DESIGN ACTIVITIES
AND WATER TREATMENT SYSTEM OPERATION AND MAINTENANCE
EMJ SLAG SITE
SOUTHEAST CORNER OF SOUTH 218TH STREET AND 88TH AVENUE SOUTH
KENT, WASHINGTON**

**Submitted by:
Farallon Consulting, L.L.C.
975 5th Avenue Northwest
Issaquah, Washington 98027
Farallon PN: 831-022**

**Prepared for
Earle M Jorgensen Company
10650 Alameda Street
Lynwood, California 90262**

June 7, 2010

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TABLE

Table 1 *OSHA Permissible Exposure Limits*

EXHIBITS

Exhibit A Air Monitoring Field Forms
Exhibit B Instrument Calibration Procedures
Exhibit C Chain-of-Custody Form

ABBREVIATIONS AND ACRONYMS

%R	percent recovery
AMP	Air Monitoring Plan
COCs	constituents of concern
DQO	data quality objectives
EMJ	Earle M. Jorgensen Company
EPA	U.S. Environmental Protection Agency
Ecology	Washington State Department of Ecology
Farallon	Farallon Consulting, L.L.C.
MCE	Mix Cellulose Ester
mg	milligram
mg/m ³	milligrams per cubic meter
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PARCC Parameters	precision, accuracy, representativeness, completeness, and comparability
PVC	polyvinyl chloride
QA	quality assurance
QA/QC	quality assurance/quality control
RPD	relative percent difference

1.0 INTRODUCTION

Farallon Consulting, L.L.C. (Farallon) has prepared this Air Monitoring Plan (AMP) on behalf of Earle M. Jorgensen Company (EMJ) to provide specific requirements for air monitoring and sampling during the cleanup action at the property located at the southeastern corner of South 218th Street and 88th Avenue South in Kent, Washington (herein referred to as the Site). The air monitoring and sampling is being conducted to protect worker health and safety. The selected cleanup action for the Site consists of excavation and off-Site disposal of approximately 16,500 cubic yards of secondary steel slag.

The purpose of the AMP is to provide specific requirements for ambient air monitoring procedures, sample collection, and analytical activities in accordance with technically acceptable protocols. The ambient air monitoring procedures are designed to ensure that workers at the Site are protected from exposure to concentrations of airborne constituents of concern (COCs) above applicable Occupational Safety and Health Administration (OSHA) permissible exposure limits (Table 1) and to monitor the effectiveness of Contractor dust control measures.

ORGANIZATION

The Air Monitoring Plan is organized as follows:

- **Section 2—Site Description.** Section 2 provides a brief summary of background information for the Site.
- **Section 3—Cleanup Action Design.** Section 3 presents the components of the cleanup action.
- **Section 4—Ambient Air Monitoring.** Section 4 presents the components of ambient air monitoring for the cleanup action, including personal air monitoring, perimeter air monitoring, and sample handling.
- **Section 5—Quality Assurance/Quality Control (QA/QC).** Section 5 presents QA/QC protocols for ambient air monitoring for the cleanup action, including field and laboratory QA/QC procedures, performance and system audits, and data assessment procedures.
- **Section 6—References:** Section 6 lists the documents cited in the AMP.

2.0 SITE DESCRIPTION

This cleanup action is being performed on behalf of Earle M. Jorgensen Company (EMJ) at the property located at the southeastern corner of South 218th Street and 88th Avenue South in Kent, Washington (herein referred to as the Site). The cleanup action will be conducted under Consent Decree No. 95-2-15301-1 (Consent Decree) entered into by the Washington State Department of Ecology (Ecology) and EMJ.

Secondary steel slag that contains lime ash that reacts with water to increase the pH (herein referred to as slag) was placed as fill on the Site between 1984 and 1990. Cleanup actions were conducted at the Site in 1995 through 1996 and in 2002 to mitigate the discharge of surface water with a pH above 8.5 from the stormwater detention pond located on the northeastern corner of the Site. Ecology confirmed that the requirements of the Consent Decree had been met and that further monitoring was no longer required.

The City of Kent measured pH levels of 12.5 to 12.8 in surface water discharging from seeps on the north and northwest sides of the Site in March 2009. Based on the pH levels measured in surface water leaving the Site in March 2009, Ecology required implementation of an interim action under the existing Consent Decree to mitigate discharge of surface water with a pH above 8.5. The interim action consists of capturing surface water for pre-treatment and disposal to the sewer system. The results of investigations conducted at the Site concluded that infiltration of precipitation and surface water bypassing the interceptor drain and barrier system (constructed as part of the previous cleanup actions at the Site, further discussed herein) react with the lime ash in the slag, elevating the pH in surface water that discharges from the seeps.

The cleanup action, presented in the Cleanup Action Work Plan prepared by Farallon to mitigate the discharge of surface water with a pH above 8.5, is removal of the slag with lime ash that reacts with surface water for off-Site disposal. Approximately 16,500 cubic yards of the slag will be removed from the Site. Ecology has reviewed and agreed to the selected cleanup action. The cleanup work is scheduled to begin in summer 2010.

3.0 CLEANUP ACTION DESIGN

The cleanup action at the Site includes excavation and off-Site disposal of approximately 16,500 cubic yards of the slag. Following excavation, the Site will be restored and graded to allow surface water to drain approximately as it did prior to slag removal activities. Site restoration will include hydroseeding areas impacted by construction, and construction of drainage features to manage stormwater runoff. The cleanup will be conducted under the authority of Consent Decree No. 95-2-15301-1 between Ecology and Earle M. Jorgensen Company.

4.0 AMBIENT AIR MONITORING

The following section includes a description of the ambient air monitoring and sampling planned during the cleanup action at the Site. The objectives of air monitoring and sampling during the cleanup action are to document that contractor dust mitigation measures are effective in preventing dust migration off the Site, and that workers are not exposed to concentrations of COCs contained in dust above permissible exposure limits (Table 1).

To meet these objectives, perimeter air monitoring and personal air monitoring will be performed. This section describes the air monitoring program in detail, including worker breathing-zone air monitoring and Site perimeter air monitoring.

4.1 PERSONAL AIR MONITORING

Personal air monitoring will be accomplished by real time dust monitoring and breathing-zone air sampling. Dust monitoring and breathing-zone air sampling will be used to assure that workers are not exposed to concentrations of COCs above applicable OSHA permissible exposure limits. Where dust or COC concentrations are determined to approach or exceed permissible exposure limits, corrective actions will be implemented as described in this section.

4.1.1 Breathing-Zone Dust Monitoring

Breathing-zone dust monitoring will be performed to provide real time measurement of dust concentrations in the breathing zone to assure workers are not exposed to concentrations of dust above action levels. The frequency, action levels, and equipment needed are described below.

- Frequency – At a minimum, one worker will carry a dust monitor on their person each day during the first week of construction activities, when construction operations change, or when worker activities potentially expose the worker to dust. The worker with the greatest exposure to construction operations that generate dust will wear the dust monitor. Following the first week of construction operations, the field worker with the greatest exposure to construction operations that generate dust will wear the dust monitor a minimum of one day per week.
- Action Levels – Concentrations of total dust in the breathing zone should not exceed the OSHA nuisance dust permissible exposure limit (respirable fraction) of 5 milligrams per cubic meter (mg/m^3) as total dust (Table 1).
- Equipment – Dust monitoring will be performed using the MIE MiniRam Sun Shield Model PDM-SNS or equivalent dust-monitoring device.

4.1.2 Breathing-Zone Air Sampling

Worker breathing-zone air samples will be collected and analyzed to correlate total dust monitoring data to concentrations of COCs in the air to assure worker exposures are below applicable OSHA permissible exposure limits. The frequency, sample analysis, action levels, and equipment needed are described below.

- Frequency – At a minimum, one worker will wear a breathing-zone air sampler each day during the first week of construction activities and when construction operations change. The worker with the greatest exposure to construction operations that generate dust will wear the breathing-zone air sampler. Samples collected during the first week of construction operations will be sent for analysis at the end of each workday and analyzed on an expedited turnaround basis. Following the first week of construction operations, the field worker with the greatest exposure to construction operations that generate dust will wear the air sampler a minimum of one day per week.
- Sample Analysis – The samples collected during the first week of construction activities will be analyzed for total dust.
- Action Levels – Concentrations of COCs in the ambient air should not exceed OSHA permissible exposure limits (Table 1).
- Equipment – Breathing-zone air sampling will be performed using the SKC-West Model PCXR8 or equivalent instrument.

4.1.3 Corrective Actions

If breathing-zone total dust concentrations exceed action levels, workers will don respirators equipped with dust cartridges and/or the Contractor will be required to implement additional dust control methods to reduce worker exposure to acceptable levels.

4.2 PERIMETER AIR MONITORING

Perimeter air monitoring will be performed to confirm that the Contractor's dust control methods are effective in preventing off-Site migration of dust generated from construction operations. To accomplish this, hourly visual monitoring of dust will be performed at the perimeter of the Site upwind and downwind of construction operations. Visual monitoring will continue daily throughout remedial operations, unless a significant precipitation event occurs, at which time dust monitoring may be suspended. Dust observations will be logged on the Visible Dust Monitoring Log (Exhibit A), making note of the time the observations were obtained, whether visible dust was observed, the weather conditions, the prevailing wind direction, and the general site conditions and activities. If visible dust is observed migrating beyond the perimeter of the Site, dust suppression methods (i.e., water spray) will be implemented to reduce airborne dust levels.

4.3 SAMPLE HANDLING

This section describes sample handling protocols.

4.3.1 Air Sample Designation and Labeling

Each air sample collected will be given a unique sample identification number to provide a tracking mechanism using the numbering system described below. The air sample identification number will include the site name code, sample type, sampling date, and a three-digit number unique to that sample. For the Site, the site name code will be "EMJS." The sample type will be designated with a two-letter code: PA (personal air sample). The sampling date will be six digits without hyphens or slashes; for example, July 1, 2010 will be designated 070110. Following is an example of sample identification numbers:

- A Site personal air sample from July 1, 2010 will be labeled "EMJS-PA-070110-001."

Field blank samples will be labeled in a similar manner, with the addition of the letter "F" at the end of the sample number. Sample numbers for field blanks will be recorded in the Air Sample Data Sheet (Appendix A).

Mix cellulose ester (MCE) and polyvinyl chloride (PVC) cassette filters sample labels will be written using waterproof indelible ink and attached to the exterior of the cassette. The following information will be placed on sample container labels:

- Project number;
- Sample identification number;
- Date and time of sampling; and
- Name(s) of sampling personnel.

4.3.2 Laboratory Analysis

The personal ambient air samples collected from the Site will be analyzed for COCs using the following analytical methods:

- Total dust using National Institute for Occupational Safety and Health (NIOSH) Method 0500; and
- Lime dust using NIOSH Method 7020.

4.3.3 Field Documentation

The primary purpose of field documentation is to provide a record of sample collection procedures. The field sampling forms will become permanent records of collection procedures. The field team will be responsible for monitoring compliance with field-sample collection protocols. At a minimum, field sampling forms will include the following:

- Sample date and time;
- Name(s) of sampling personnel;
- Sample number and work area;
- Person carrying personal air sampler during work day, where applicable;
- Site conditions;

- Beginning and ending pump flow rate, where applicable; and
- Beginning and ending time of sampling period.

All sampling data will be written in waterproof indelible ink. All information will be recorded on the Field Sample Data Sheet (Exhibit A).

4.3.4 Field Chain of Custody

The primary purpose of the chain-of-custody procedures is to document possession of the samples through collection, storage and analysis, and reporting. Chain-of-Custody forms will become permanent records of sample handling and shipment. The field team will be responsible to the Project Manager for monitoring compliance with chain-of-custody procedures.

Field sampling personnel are responsible for the care and security of field and laboratory samples from the time the samples are collected until they have been turned over to the shipper. A sample is considered to be in custody if it is in plain view at all times, in the physical possession of the sampler, or stored in a locked place where tampering is prevented.

A Chain-of-Custody form will accompany a batch of samples stored at the Site or sent to the analytical laboratory. At a minimum, each Chain-of-Custody form will contain the following information:

- Sample identification number and location of sampling point;
- Date and time of sampling;
- Type of sample and number of containers of samples from each sampling point;
- List of analyses requested;
- Names and signatures of sampling personnel;
- Shipping air bill number; and
- Spaces for transfer-of-custody acknowledgment.

When the Chain-of-Custody form has been completed or when all samples that will make up a batch have been collected, the field team member will cross-check the form for possible errors and sign the Chain-of-Custody form. Any corrections to the form will be made with a single strike mark, dated, and initialed. The signed Chain-of-Custody form will be sealed in a plastic bag and placed in the shipping container prior to sealing the container for shipment. Samples packaged for shipment and dispatched to the independent laboratory will contain a separate Chain-of-Custody form accompanying each cooler. A copy of each Chain-of-Custody form will be retained by the sampling team for the project file, and the original will be sent with the samples. A sample of the Chain-of-Custody form that will be used during the cleanup action is included in Exhibit C.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

This section identifies the QA/QC protocols to be implemented in conjunction with air monitoring and sampling during the cleanup action for Site, including sample collection procedures, analytical methods, QA/QC procedures, and data quality reviews to ensure that the data quality objectives (DQOs) are met. Both the quantitative and qualitative measures of data quality to ensure that the DQOs are achieved are described.

5.1 DATA QUALITY OBJECTIVES

The DQOs for this project are to develop and implement procedures to ensure that data are of sufficient quality to accurately assess the impacts of COCs and total dust on ambient air quality at the Site. All observations and measurements will be made and recorded in such a manner as to yield results representative of the medium and conditions observed and/or measured. The quality of the laboratory data will be assessed by precision, accuracy, representativeness, completeness, and comparability (the PARCC Parameters). Definitions of these parameters and the applicable quality control procedures are described in Subsections 5.1.1 through 5.1.5. Quantitative DQOs for applicable parameters (e.g., precision, accuracy, completeness) are provided following each definition. Laboratory DQOs have been established by the analytical laboratory and are specified in the analytical laboratory's Quality Assurance Plan, which is kept on file in the Farallon office.

5.1.1 Precision

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, precision is a quantitative measure of the variability of two or more measurements compared to their average values. Precision is calculated from results of duplicate sample analyses. Precision is quantitatively expressed as the relative percent difference (RPD), and is calculated as follows:

Where:

$$RPD = \frac{(C_1 - C_2)}{(C_1 + C_2)/2} \times 100$$

C_1 = the larger of the two duplicate results (i.e., the highest detected concentration); and

C_2 = the smaller of the two duplicate results (i.e., the lowest detected concentration).

Quantitative μ criteria for laboratory duplicate results have been developed by the U.S. Environmental Protection Agency (EPA) and/or NIOSH for inorganic chemical analysis. Laboratory-derived criteria will be used to assess the validity of duplicate results.

5.1.2 Accuracy

Accuracy is a measure of the closeness (bias) of the measured value to the true value. The accuracy of chemical analysis results is assessed by “spiking” samples in the laboratory with known standards (i.e., matrix spikes of known concentration) and determining the percent recovery. Accuracy is measured as the percent recovery (%R), and is calculated as follows:

$$\%R = \frac{(M_{sa} - M_{ua})}{C_{sa}} \times 100$$

Where:

M_{sa} = measured concentration in spiked aliquot;

M_{ua} = measured concentration in unspiked aliquot; and

C_{sa} = actual concentration of spike added.

Where applicable, laboratory matrix spikes, blank spikes, and/or laboratory controls samples will be prepared at the analytical laboratory in accordance with NIOSH requirements for inorganic chemical analyses. Laboratory-derived control limits will be used to assess the validity matrix spike, blank spikes, and or laboratory controls samples results.

The accuracy of sample results can be affected also by sample contamination. Sample contamination can occur because of improperly cleaned sampling equipment, exposure of samples to chemical concentrations in the field or during transport to the laboratory, or chemical concentrations in the laboratory. To ascertain that the samples collected are not contaminated during handling, transport, or analysis, several types of blank samples will be analyzed.

5.1.3 Representativeness

Representativeness is a qualitative measure of how closely the measured results reflect the actual concentration or distribution of the constituent concentrations in the matrix sampled. The sampling plan design, sampling collection techniques, sample handling protocols, sample analysis methods, and data review procedures have been developed to ensure that the results obtained are representative of site conditions.

5.1.4 Completeness

Completeness is defined as the percentage of measurements judged to be valid. Results will be considered valid if they are not rejected during data validation. Completeness is calculated as follows:

$$Completeness = \frac{(Number\ of\ Valid\ Measurements)}{(Total\ Number\ of\ Measurements)} \times 100$$

The target completeness goal for this work will be 90 percent for a given analysis.

5.1.5 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. The use of standard EPA and Ecology methods and procedures for both sample collection and laboratory analysis will make the data collected during the cleanup action internally consistent.

5.2 SAMPLING PROCEDURES

All sampling protocols will be performed in accordance with generally accepted environmental practices and will meet or exceed current regulatory standards and guidelines. Sampling procedures may be modified if necessary to satisfy amendments to current regulations, methods, or guidelines.

5.2.1.1 Duplicate Samples

Duplicate samples will be collected at a frequency of 10 percent, or one for every 10 perimeter air samples collected. To collect the duplicate sample, two air sampling instruments will be placed at the same location for a single sampling event.

5.2.1.2 Quality Control Samples

Trip blanks will consist of one unopened MCE and PVC cassette filter for every 10 samples collected. Field blanks will consist of two MCE and PVC cassette filters that have been exposed to the ambient air in the active soil handling areas, and/or at the perimeter of the Site. Field blanks will accompany each batch of cassette filters sent for chemical analysis.

To expose a cassette filter to the ambient air, remove the end-caps from in and out ports of the filter, expose the filter to the ambient air for 5 minutes, and return the end-caps to the in and out ports of the filter.

5.2.1.3 Laboratory Method Blanks

The laboratory will run method blanks at a minimum frequency of 5 percent, or one per batch to assess sample contamination in the laboratory.

5.3 ANALYTICAL PROCEDURES

Chemical and physical analyses to be conducted during the cleanup action are discussed in Section 4.0. The container types, holding times, analytical methods, practical quantitation limits, and method detection limits will be in accordance with current regulatory guidelines.

5.4 DATA REDUCTION AND ANALYSIS

The Project Manager and Project QA/QC Officer are responsible for data review and validation. The particular type of analyses and presentation method selected for any given data set will depend on the type, quantity, quality, and prospective use of the data. The analysis of the project data is likely to require data reduction for preparation of tables, charts, and maps. To ensure that data are accurately transferred during the reduction process, the Project QA/QC Officer or designee (someone other than the person who prepared the map, table, or chart) will check all reduced data. Any incorrect transfer of data will be highlighted and corrected.

5.5 QUALITY CONTROL PROCEDURES

This section identifies the quality control procedures to be implemented in association with the cleanup action. The quality control procedures ensure that field and analytical results provide a high degree of data usability to meet the cleanup objectives for the Site.

5.5.1 Air Sample Quality Control

Air sample quality control samples (e.g., field blank samples) to be collected during this project are described in Section 4.4.1.

5.5.2 Laboratory Quality Control

Analytical laboratory QA/QC procedures are provided in the laboratory's Quality Assurance Plan.

5.5.3 Data Quality Control

All data will undergo two levels of QA/QC evaluation: one by the laboratory for all analytical data, and one by Farallon for both analytical data and field data. The laboratory will perform initial data reduction, evaluation, and reporting, as specified in the laboratory's Quality Assurance Plan. The analytical data will then be validated at Farallon under supervision of the Project QA/QC Officer. The following types of quality control information will be reviewed, as appropriate:

- Method deviations;
- Sample digestion and holding times;
- Method reporting limits;
- Blank samples;
- Duplicate samples (precision);
- Matrix spike/matrix spike duplicate samples (accuracy);
- Blank spikes and laboratory control samples;
- Reference control samples; and
- Percent completeness.

Farallon will review field records and results of field observations and measurements to ensure that procedures were properly performed and documented. The review of field procedures will include:

- Completeness and legibility of field logs and sampling forms;
- Preparation and frequency of field quality control samples;
- Equipment calibration and maintenance; and
- Chain-of-Custody forms.

5.6 PERFORMANCE AND SYSTEM AUDITS

Performance audits will be completed for both sampling and analysis work. Field performance will be monitored through regular review of Chain-of-Custody forms, field notebooks, sampling forms, and field duplicate sampling and analysis. The Project Manager and/or the Project QA/QC Officer also may perform periodic on-Site review of work in progress.

Accreditation from Ecology for each analysis performed by the laboratory demonstrates the laboratory's ability to perform the requested methods properly. Therefore, a system audit of the analytical laboratory during the course of this project will not be conducted.

The Project Manager and/or Project QA/QC Officer will oversee communication with the analytical laboratory on a frequent basis while samples are being processed and analyzed at the laboratory. This will allow Farallon to assess progress toward obtaining the DQOs and to take corrective measures if a problem arises.

The analytical laboratory will be responsible for identifying and correcting, as appropriate, any deviations from performance standards, as discussed in the laboratory's Quality Assurance Plan. The laboratory will communicate to the Project Manager or the Project QA/QC Officer any deviation from a performance standard during sample analysis, and the appropriate corrective measure(s).

5.7 DATA ASSESSMENT PROCEDURES

The Project Manager and Project QA/QC Officer are responsible for data review and validation. Upon receipt of each data package from the laboratory, calculations using the equations presented for precision, accuracy, and completeness will be performed. Results will be compared to the qualitative DQOs.

5.8 CORRECTIVE ACTION

Corrective action will be the joint responsibility of the Project Manager and the Project QA/QC Officer. Corrective procedures may include:

- Identifying the source of the violation;
- Re-analyzing samples, if holding time criteria permit;

- Re-sampling and analyzing;
- Evaluating and amending sampling and analytical procedures; and/or
- Qualifying data to indicate the level of uncertainty.

During field sampling activities, the Project Manager and field team members will be responsible for identifying and correcting protocols that may compromise the quality of the data. The Project Manager and/or Project QA/QC Officer will be verbally notified to obtain approval to proceed prior to implementing a corrective action. All corrective action taken will be documented in the Field Report form (Exhibit A).

6.0 REFERENCES

National Institute for Occupational Safety and Health (NIOSH). 2006. *NIOSH Pocket Guide to Chemical Hazards*. August.

TABLE

AIR MONITORING PLAN EMJ Slag Site Kent, Washington

Farallon PN: 831-022

Table 1
OSHA Permissible Exposure Limits
EMJ Slag Site
Kent Washington
Farallon PN: 831-022

Ambient Air Constituents	PEL mg/m3
Hydrated Lime Dust	5 ¹
Nuisance Dust (respirable fraction)	5 ²

NOTES:

¹ NIOSH Pocket Guide to Chemical Hazards, DHHS (NIOSH) Publication No. 2005-149, August 2006.

² 29 CFR Part 1910.1000

OSHA = Occupational Safety and Health
Administration

PEL = Permissible Exposure Limit for 8-hour work
period

EXHIBIT A
AIR MONITORING FIELD FORMS

AIR MONITORING PLAN
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

AIR SAMPLE DATA SHEET

[illegible]

VISIBLE DUST MONITORING LOG

Date	Time	Perimeter Observations of Visible Dust		General Site Conditions and Activities	Weather		Observed by	Corrective Actions
					Conditions	Wind Direction		
		Upwind Yes/No	Downwind Yes/No					

EXHIBIT B
INSTRUMENT CALIBRATION PROCEDURES

AIR MONITORING PLAN
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

AIR SAMPLE PUMP CALIBRATION PROCEDURES

Personal ambient air sampling pumps must be properly calibrated to assure accurate volumes and sample concentrations. The sampling pumps will be calibrated using one of the following procedures:

- Sample pump calibration with primary standard. Primary standard will be the Bios DryCal DC Lite Calibrator, Model 12K. This is a primary standard traceable to Nation Institute of Standards and Technology with a range of 5 to 5000 milliliters; and/or
- Sample pump calibration with a secondary standard. A rotameter is first calibrated to the primary standard (above) and is then used to check sample flow rates in the field. A calibration curve is established for the rotameter at flow rates that will be encountered in the field.

CALIBRATION PROCEDURES

Bios DryCal – Primary Standard

- Read and follow manufacturer's instructions;
- Turn on sample pump and run for 5 minutes prior to calibration;
- Attach sample MCE and PVC filter cassette to sample hose and attach sample hose to pump. Be sure to note proper airflow direction on the filter cassette;
- Set pump to desired flow and check flow rate on pump rotameter with the flow rate of the primary standard;
- Run the DryCal calibration and write down flow rate of primary standard; and
- Turn off pump and discard the filter cassette.

CALIBRATION OF SECONDARY STANDARD

- Set up BIOS DryCal in accordance with manufacturer's instructions;
- Establish a rotameter with flow range of 1 to 5 liters per minute (lpm) air;
- Attach inlet of rotameter to outlet of DryCal, attach outlet of rotameter to inlet of a filter cassette, and attach outlet of sample media to inlet of sample pump with sample hoses;
- Turn on sample pump and allow the pump to warm up for at least 5 minutes;
- Adjust sample flow rate indicated on the rotameter with the sample pump to desired flow rate; and
- Write down indicated flow rate from the rotameter and then activate DryCal and note actual flow rate from the DryCal.

The procedure outlined above should be performed at least three times for each desired flow rate to establish a calibration curve of indicated flow rate versus actual flow rate for the rotameter. The flow rate should range from 1 to 4 lpm in 0.5 lpm. The secondary standard is now calibrated to the primary standard. The calibration curve for the rotameter can now be used to establish flow rates without taking the DryCal out of the office environment.

FLOW CALIBRATION WITH SECONDARY STANDARD.

- Turn on pump and allow to run for 5 minutes prior to calibration;
- Attach filter cassette to pump with sample hose. Be sure to note proper airflow direction on the filter cassette; and
- Attach inlet of sample media to outlet of rotameter with sample hose and adjust indicated flow rate on rotameter to desired flow.

EXHIBIT C
CHAIN-OF-CUSTODY FORM

AIR MONITORING PLAN
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

